AD-A185 013 VIC (VECTOR-IN-COMMANDER) INPUT PREPROCESSOR (VIP) 1/1
REFERENCE MANUAL(U) ARMY TRADOC ANALYSIS COMMAND FORT
LEAVENWORTH KS M CHENAULT AUG 87 TRAC-F-TM-1007
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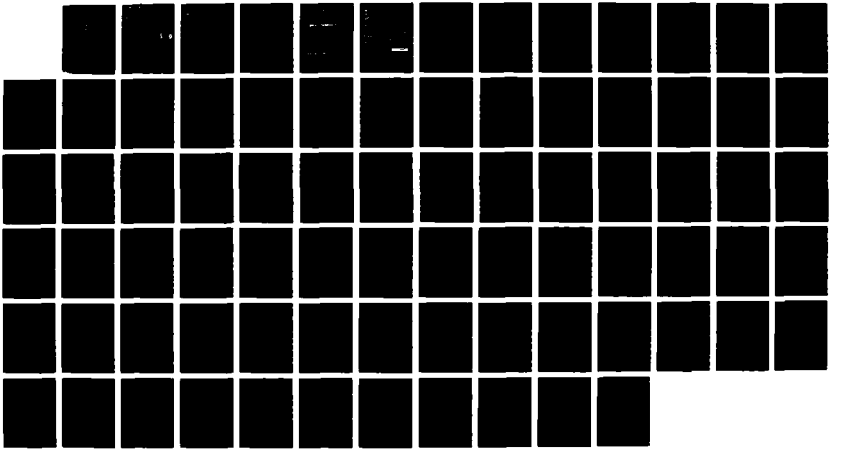

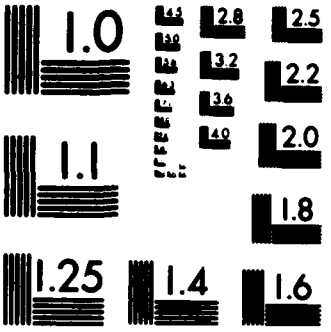

Technical Memorandum TRAC-F-TM-1087
August 1987

TRADOC Analysis Command-Fort Leavenworth (TRAC-FLVN)
Operations Directorate
Ft. Leavenworth, Kansas 66027-5200

VIC INPUT PREPROCESSOR (VIP) REFERENCE MANUAL

Compiled and Edited by

SP4 M. Chenault

ACN 48722

SECURITY CLASSIFICATION OF THIS PAGE

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REPORT DOCUMENTATION PAGE

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VIC Input Preprocessor (VIP) Reference Manual

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17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

VIC Input Preprocessor (VIP) was conceived as a necessity to reduce the time required to develop scenarios for the combat model, Vector-In-Commander (VIC). As such, VIP works primarily with the second and third largest of the VIC input files: the global ground module (.GG), of which VIP provides all the unit data, and the ground maneuver module (.GM), of which VIP provides the tactical area data.

In addition, the following modules receive at least part of their input from a VIP-generated output file. The logistic module (.LO) receives the node network information from VIP. The minefield module (.MF) receives the minefield location and density from VIP. The terrain and barriers module (.TB) receives the barrier information from VIP.

Another major function of VIP is the ability to create and alter maps as per user specifications. Map coordinates as well as map scale are entirely user defined. There exist separate files which contain not only all major and minor roads, but also rivers, streams, and railways which are also user selectable.

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19. Continuation

VIP is a graphics-based software package which contains a wide variety of routines to create a flexible user environment. User menus can be moved, redefined, and redrawn with no loss in operating procedures. Personal color schemes can be created, changed, and saved at any point during VIP execution. The package also contains many routines for the creation of slides, either text slides or graphic slides. In many ways, VIP is a generic menu-driven graphics package which does not have to be exclusively bound to VIC.

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ACKNOWLEDGEMENTS

The primary authors of the VIC Input Preprocessor (VIP) software package were TRAC-White Sands personnel, most notably, Jim Lankford and Linda Stead. The Technology Applications Branch graphics team of TRAC-Fort Leavenworth provided debugging and enhancement support.

The version of VIP described in this document differs significantly from the TRAC-White Sands version. The technology Applications Branch graphics team consisting of Mr. R. Pete Kaeding, Mr. Tim Daniels, and SP4 Mike Chenault have made numerous enhancements to the package with several more planned for later incorporation. Some of the documentation was extracted from the TRAC-White Sands-produced menu help text with elaboration where necessary. However, most of the context came from lessons learned during execution of the software.

CONTENTS

CONTENTS

ABSTRACT

VIC Input Preprocessor (VIP) was conceived as a necessity to reduce the time required to develop scenarios for the combat model, Vector-In-Commander (VIC). As such, VIP works primarily with the second and third largest of the VIC input files: the global ground module (.GG), of which VIP provides all the unit data, and the ground maneuver module (.GM), of which VIP provides the tactical area data.

In addition, the following modules receive at least part of their input from a VIP-generated output file. The logistic module (.LO) receives the node network information from VIP. The minefield module (.MF) receives the minefield location and density from VIP. The terrain and barriers module (.TB) receives the barrier information from VIP.

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VIP is a graphics-based software package which contains a wide variety of routines to create a flexible user environment. User menus can be moved, redefined, and redrawn with no loss in operating procedures. Personal color schemes can be created, changed, and saved at any point during VIP execution. The package also contains many routines for the creation of slides, either text slides or graphic slides. In many ways, VIP is a generic menu-driven graphics package which does not have to be exclusively bound to VIC.

1. Purpose. This manual provides detailed information on all options and menus pertaining to the VIP software package. It also shows the required logical assignments necessary to execute the VIP software package.

2. Scope. This manual is designed to be an aid for use in conjunction with the VIP Users Manual. This manual provides the range of valid inputs or expected character string inputs.

3. VIP menu reference.

a. Main menu. The main menu consists of a series of data menus and several user features. You must return to the main menu to end the program or to use the keyword and parameter options, as this is the only place that they appear. Additionally, the main menu allows access to the data menus (any menu in which a file is created, i.e., unit menu, minefield menu, barrier menu, or network menu.)

Data are retained until a menu of a different data type is selected, or the data are transferred to the background plane.

If there are entities (or data) currently in memory when this menu is selected, the computer prompts: "HAS DATA BEEN RECORDED?"

Answer - YES to continue (DESTROYS EXISTING DATA IN ARRAYS!)
- NO returns to data menu to record.

No other action is possible until this question has been answered.

Main menu options:

KEYWORD **See paragraph 3b for more information.**
Transfers control to CRT. The menus are cleared from the screen. Keywords are then input from the CRT until the keyword "MENU" is input. It is through this function that picture files can be created along with slides. Individual menus can be moved or redefined by using the proper keywords. The setcolors command to change colors in a plane is reached through the keyword option.

END Exit from program. All files are closed.

UNIT MENU **See paragragh 3c for more information.**
Menu for defining unit locations and unit data. Allows access to the path points menu and the tactical menu. These menus create the data file DA_DATA:UNIT#.DAT which is then used in the creation of the VIC global ground module. (.GG)

UNIT ID GEN **See paragraph 3f for more information.**
Unit identification generator for name, location, hierarchy, and symbol. The data are recorded on exit from the id generator in DA_DATA:UNIT#.DAT and control is returned to the unit menu.

SUBORD MENU **See paragraph 3g for more information.**
Unit subordinate structure menu for VIC ground maneuver module (.GM) Uses as input the file DA_DATA:UNIT#.DAT but when recording, it saves its data to the file DA_DATA: UNIT#.SUB.

COMMS MENU **See paragraph 3h for more information.**
Communications structure menu for creation and definition of networks. Uses as input the file DA_DATA:UNIT#.DAT, but when recording, it is saved to DA_DATA:UNIT#.NET.

RT PLAN MENU **See paragraph 3i for more information.**
Detailed route planning menu. Not designed for use in the creation of VIC data files but useful in the area of scenario generation.

MINEFLD MENU **See paragraph 3j for more information.**
Minefield emplacement menu for minefield module (.MF)

BARRIER MENU **See paragraph 3k for more information.**
Barrier menu for area obstacles for terrain and barriers module (.TB)

LINE OB MENU **See paragraph 3l for more information.**
Line obstacle menu for terrain and barriers module (.TB)

NETWORK MENU **See paragraph 3m for more information.**
General network menu for logistics module (.LO) The logistics menu is reached from this menu. It works on the same data that are created in the network menu.

PARAMETERS **See paragraph 3p for more information.**
Menu to set parameter switches. The UTM/MC coordinate option selection resides here. The major function of this menu is to allow previously defined data files to be read in when the user is in a different data menu.

CHANGE PLANE Transfer entities from foreground to background planes. Background plane in this case is defined as plane 2. The data will be visible in plane 2 but can no longer be worked on.

GRAPHICS **See paragraph 3q for more information.**
Graphics menu to load, zoom maps. Also, used for the clearing of the upper 2 planes and setting drawing color.

PLAYBACK Play back the detailed route planning data over time. For use with the route planning files.

UTILITY MENU Draw the utility menu which contains the most commonly used keywords. Unlike the keyword option, commands are selected with the cursor.

b. Keyword. It may be necessary or useful to enter the commands via the keyboard and not with the bitpad. A complete listing of keywords is given below.

Keywords:

--GRAPHICS-----	TERRAIN-------	MENU MENU-----	MENU DEFINE---	SLIDE--------	OTHER--
ERASE	SETCOORD	SELECTMENU	STARTX	SELCOLOR	HELP
ERASE1	MAPSIZE	DRAWMENU	STARTY	SELPLANE	DCL CMD
ERASE2	SETFEATURE	ERASEMENU	ITXLNG	SELTEXTSIZE	DEMOLOAD
ERASE3	DRAWGRID	SAVEMENU	ITXSZ	SELTEXTDIR	UNITID
SELERASE	DRAWBORDER	LOADMENU	NUMBRX	LINEDRAW	END
MAPERASE	DRAWROADS	MSAVEMENU	NUMBRY	TEXTDRAW	
SAVEPIC	DRAWVEG	MLOADMENU	IGRPLN	RECTDRAW	
LOADPIC	DRAWCITY	DEFINEMENU	IGRCOL	REMOVE	
SP LOADPIC	DRAWFADS	SHOWMENU	ICHPLN	MOVEPIC	
MAKEPIC	WHERE	GRIDMENU	ICHCOL	EMOVEPIC	
PICTURE	WHEREMC	SIZEMENU	IHLCOL	SMOVEPIC	
SETCOLORS	MCLINE	INQUIREMENU		ESMOVEPIC	
SAVECOLORS	MCPOINT	LISTMENU		CURLOADPIC	
LOADCOLORS	MC2UTM	WHEREMENU			
CCOLOR	UTMLINE	CAP			
CZOOM	ZONCHG	CSXY			
HZOOM	ZONECHANGE	CSX			
REZOOM	MAPNAME	CSY			
UPZOOM	SELMAPS	CHANGETEXT			
ZOOM	SPDRAWROADS				
PANORG	SPDRAWVEG				
REFMAP	SPFASTVEG				
REFPIX	FASTDRAWVEG				
RECTMAP	BDRAWVEG				
SETCLIP					
SETORIGIN					
CURORIGIN					

The function of individual keywords within these groups are as follows:

Graphics:

1.	ERASE	Clears all three viewable planes.
2.	ERASE1	Clears the bottom plane (where the map is drawn).
3.	ERASE2	Clears the middle plane.
4.	ERASE3	Clears the top plane (where the unit data are drawn).
5.	SELERASE	Selectively erases a part of any plane.
6.	MAPERASE	Erases a plane using a selected color.
7.	RECTMAP	Draws a rectangle around a defined portion of the map.
8.	SAVEPIC	Saves the current map to a file.
9.	LOADPIC	Loads a map from a file.
10.	SP_LOADPIC	Enters a single particular .pic file.
11.	SETCOLORS	Can change the colors on each plane.
12.	SAVECOLORS	Saves the changes made with SETCOLORS in a file.
13.	LOADCOLORS	Loads color file previously saved.
14.	CCOLOR	Changes color of a plane.
15.	CZOOM	Zooms on cursor position. Repeating.
16.	HZOOM	Hardware zoom using 0,0 as x,y min.
17.	REZOOM	Defaults back to original screen size.
18.	UPZOOM	Multiple zooms around a point.
19.	ZOOM	Sets with cursor the software zoom window center.
20.	PANORG	Zooms and pans across the picture.
21.	SETCLIP	Sets viewable window size.
22.	CURORIGIN	Moves the 0,0 point to a spot picked by cursor.
23.	SETORIGIN	Moves the 0,0 point to a spot input by keyboard.

Terrain:

1.	SETCOORD	Creates own grid pattern. Will erase current map.
2.	MAPSIZE	Draws grid according to military coordinates (coords).
3.	SETFEATURE	Draws submenu to select features active.
4.	DRAWGRID	Draws grid according to coord system in use.
5.	DRAWBORDER	Draws any border previously defined in the pic file.
6.	DRAWROADS	Draws the roads previously defined for this pic area.
7.	DRAWVEG	Draws the vegetation for this pic area.
8.	DRAWCITY	Draws the city names defined for this pic area.
9.	WHERE	Gives pixel and map coords for cursor position.
10.	WHEREMC	Converts cursor position into military coords.
11.	MCPOINT	Draws a point at a given military coord.
12.	MCLINE	Draws a line between military coords.
13.	UTMLINE	Draws a line using UTM coords.
14.	MC2UTM	Translates military coords to UTM coords.
15.	ZONCHG	Changes zones using the cursor as coord input.
16.	ZONECHANGE	Changes from one zone to another in UTM coords.
17.	SELMAPS	Draws a global map showing which maps are defined.
18.	MAPNAME	Using cursor, displays which map(s) are being used.
19.	SPDRAWROADS	Displays a specific map file, entered from keyboard.
20.	SPDRAWVEG	Displays a specific veg file, entered from keyboard.
21.	SPFASTVEG	Faster version of SPDRAWVEG.
22.	FASTDRAWVEG	Draws vegetation maps faster than DRAWVEG.

Menu util:

1.	SELECTMENU	Selects menu to work with.
2.	DRAWMENU	Displays to screen the menu loaded.
3.	ERASEMENU	Erases selected menu from screen.
4.	SAVEMENU	Saves selected menu to local file.
5.	LOADMENU	Loads a menu from the .MEN file.
6.	MSAVEMENU	Saves a master menu to local file.
7.	MLOADMENU	Loads a master menu from the .MEN file.
8.	DEFINEMENU	Selects menu size, position and color.
9.	SHOWMENU	CRT displays menu attributes.
10.	CHANGETEXT	Alters text within a menu field.
11.	WHEREMENU	Using cursor, establishes menu coordinates.
12.	CSXY	Draws menu at cursor origin starting at upper left.
13.	CSX	Draws menu at cursor x origin. y unchanged.
14.	CSY	Draws menu at cursor y origin. x unchanged.
15.	CAP	Text size of capitals.
16.	GRIDMENU	Draws the menu boxes with no text.
17.	SIZEMENU	(not active)
18.	INQUIREMENU	Gives menu attributes for particular menu.
19.	LISTMENU	Lists current menus available.

Menu define:

1.	STARTX	Starting x position for menu draw.
2.	STARTY	Starting y position for menu draw.
3.	ITXLNG	Widens menu box for text length.
4.	ITXSZ	Alters text and box size to accomodate text.
5.	NUMBRX	Number of columns across for menu.
6.	NUMBRY	Number of rows down for menu.
7.	IGRPLN	Plane to draw grid on.
8.	IGRCOL	Color grid to be drawn in.
9.	ICHPLN	Plane to draw text on.
10.	ICHCOL	Color text to be drawn in.
11.	IHLCOL	Highlighting color.

Slide:

1.	SELCOLOR	Selects color for drawing.
2.	SELPLANE	Selects plane to draw on.
3.	SELTEXTSIZE	Selects text size for display.
4.	SELTEXTDIR	Direction of text display.
5.	LINEDRAW	Draws line on CRT using defined colors and plane.
6.	TEXTDRAW	Draws a text string using defined colors and plane.
7.	RECTDRAW	Draws rectangle on CRT using defined color and plane.
8.	REMOVE	Erases last text, line, or rectangle drawn.
9.	MOVEPIC	Moves part of the picture with cursor.
10.	EMOVEPIC	Erases and moves part of the picture.
11.	SMOVEPIC	Saves and moves part of the picture.
12.	ESMOVEPIC	Erases, saves, and moves part of the picture.
13.	CURLOADPIC	Loads a picture file using cursor as 0,0 reference.

Other:

1.	HELP	Toggles on and off the help utility.
2.	DCL CMD	Allows system commands from inside VIP.
3.	DEMOLOAD	(demo file not present)
4.	UNITID	Goes into unit id generator.
5.	END	Stop program.

Most of these keywords are available by using the utility menus. The utility menu is reached from the main menu.

c. Unit menu. The unit menu contains the function options to deploy units to starting positions (if there are no defined locations in ID GEN). It also allows for creation of new units, copy of units, and deletion of unwanted units. Individual data entries (i.e., initial mass, prototype, radius, delta, and orientation) can be entered at this time. Units are stored in direct access file DA_DATA:UNIT#.DAT.

MAIN MENU	Return to main menu. Asks if data has been recorded, because if a different data type is selected, all previous data are deleted. Answer YES/NO. If answer is NO, the previous menu is displayed so that the data may be recorded.
PATH PT MENU	Path point menu to create routes for the units. The UNIT#.DAT is still the file being worked on. See paragraph 3d for more information.
INPUT/OUTPUT	Draws the input/output menu, at the bottom of the screen to read, record, and print data. See paragraph 3r for more information.
GRAPHICS	Draws the graphics menu at the bottom of the screen for loading and manipulation of picture files. See paragraph 3q for more information.
SELECT UNIT	Select new unit by touching unit with the cursor. Selected unit is highlighted.
NEW UNIT	Create a new unit. The size of the unit will be taken to be the last values of frontage and depth. Select the position of the center of the unit with the cursor. The unit is drawn in highlight color at the cursor postion.
COPY UNIT	Copy the selected unit to produce a new unit at a new location. If no unit has been selected, you are prompted to select a unit to copy. After selection, that unit will be highlighted. Select position for center of the new unit. A unit is drawn in the new location and highlighted. Subsequent pressing of the cursor in the map area produces more copies. To terminate, select from menu area.
DEPLOY UNIT	Move unit to new location. If no unit has been selected, select unit. Select new position for the center of the unit. The unit is redrawn and highlighted at the new location. If the unit has a path and the new position for the unit is not on that path, then the path point for the unit is moved.

MIL COORD	Draws a triangle on the screen at selected location. Enter military coordinates and zone number of location.
UNIT ID	Name of unit. Enter up to 12 alphanumeric characters. The name is checked against the unit currently held in the computer and against the unit file loaded to ensure that the name is unique. If there is already a unit in the computer by the name, it is highlighted.
SET SYMBOL	Select new symbol for selected unit. Symbols are created using the symbol generator program. The first character of the unit name is combined with the symbol number to identify the symbol. Enter the number of the new symbol. The new symbol is highlighted. Symbols are displayed as Bxxx or Rxxx by side. This option allows the user to change the three-digit TOE number associated with the unit. See paragraph 3f for TOE listing.
RADIUS	Draw a circle of specified radius centered on the unit location. Enter the radius of the circle.
DELETE UNIT	Select unit to be deleted. Deletes data on selected unit and removes it from the screen. The unit is only deleted from local memory. The file in DA DATA: remains intact until deleted or overwritten. Further units may be deleted by selecting with the cursor. CAUTION: This function is still active until it is deselected by making another menu selection.
INIT MASS	Initial mass of the unit is derived from some computation which utilizes some system of assigning a value or weight to each piece of equipment which is organic to the unit.
PROTOTYPE	Unit prototype number. Identifies generic type units which have common attributes. This number must be between 1 and the total number of prototypes.
UNIT RADIUS	Radius of the area occupied by the unit's systems (meters). This circle may expand or contract depending on the ground combat status mappings data in VIC.
UNIT DELTA	The radius of the circle which contains one-half of the weapons for the unit. This is the basic radius which applies when the unit is considered to be in some "standard" deployment.
ORIENTATION	Unit's initial orientation measured in degrees, counterclockwise from east.

d. Path point menu. This screen allows the creation of individual paths by inputing the nodes or points the unit is to follow. Multiple paths on the same route are made easier with the copy path function. The individual node data as to point type, preparedness, requirements, and wait times can be entered at this point.

UNIT MENU	Returns to unit location menu.
TACT MENU	Tactical area menu for VIC ground movement module. If no unit has been selected, select unit. Tactical areas are automatically recorded in DA_DATA:TACTAREA#.DAT where # is the unit direct access file number. If no file has been assigned, prompts for the file number.
RT PLAN MENU	Detailed route planning menu. See paragraph 3i for more information.
INPUT/OUTPUT	Draws the input/output menu, at the bottom of the screen to read, record, and print data. See paragraph 3r for more information.
GRAPHICS	Draws the graphics menu at the bottom of the screen for loading and manipulation of picture files. See paragraph 3q for more information.
SELECT UNIT	Select new unit by touching unit or path with the cursor. Selected unit and path is highlighted.
CREATE PATH	Create a path for the selected unit, or add to an existing path. If a path already exists, the path is continued from the last node. The position of each node of the path is selected with the cursor. The last node entered may be deleted by selecting it with the cursor. To complete the path, press cursor in the menu area. Then the nodes of the path are joined and highlighted. If the unit is not positioned at one of the path points, the closest end of the path is joined to the unit.
COPY PATH	May only be accessed after CREATE PATH has been keyed. Select a path to copy. Select the first and last nodes to copy. The path is highlighted. Enter any new nodes after the copied path, if any. To complete the path, press cursor in the menu area. Then the nodes of the paths are joined and highlighted. If the unit is not positioned at one of the path points, the closest end of the path is joined to the unit.
EDIT PATH	Draw the edit menu at the bottom of the screen for use in modifying individual nodes within paths. See paragraph 3n for more information.

DELETE PATH — Delete the path. If no unit is selected, select unit and delete its patn.

SELECT NODES — Select first and last path points for which data is to be entered.

POINT TYPE — The path point must have a certain type associated with it:

- IMED - Immediate
- DEF - Defense
- DLAY - Delay
- RESV - Reserve
- APZ - Air pickup zone
- ALZ - Air landing zone
- HBAS - Helo base point
- HATK - Helo attack point
- EBAS - Engineer base point

NOTE: Helicopter units that fly missions must be given HBAS point types. Engineer units that carry out missions must be given EBAS point types.

PREPRD STATE — Initial prepared state of the path point. This value lies between 0.0 and 1.0 to define the degree to which this path point has currently been prepared. This parameter may be omitted for input in which case the model resorts to default values as follows: 1.0 for DEF type path points, 0.0 otherwise.

ENG REQUIRED — "Y" indicates that engineers are required to prepare the path point. This is a toggle selection, default is no. The DLAY and DEF are the only types of points that can be prepared so a "Y" against any other path point types will flag an error and terminate VIC on loading.

AREA TYPE — The path point is defined as being located in a particular type of area:

- CFA - Covering force area
- MBA - Main battle area
- RESV - Reserve area
- 1ECH - First echelon area
- 2ECH - Second echelon area
- REAR - Rear area

As a blue unit progresses along its path, its role is reset to the value of the area type. The red units are handled in a different manner. The area type of their starting point defines their initial role, then their role changes as a result of decision table logic only. Therefore, the area type associated with a red unit's path points is irrelevant except for the starting node.

WAIT TYPE — Options for control of the time element for path point events.
- SYNC - Synchronize
- DLTA - Delta wait
- STAT - Static
- RGRP - Regroup
- RMOV - Remove
- RORG - Reorganize

WAIT TIME — Specifies when a unit departs from a path point when simulating without table-driven ground movements (days, hours, minutes).

e. Tactical menu. The tactical menu creates tactical areas for the unit path points. The file is opened and the tactical areas are automatically recorded in DA_DATA:TACTAREA#.DAT where # is the file number inputted for the UNIT#.DAT file. The tactical area numbers are assigned to the path points. These numbers are written to the unit file and correspond directly to the tactical area file. Both these files after going to OUTPUT: are combined and used in the VIC global ground module (.GG).

PATH PT MENU — Returns to the path point menu and saves all tactical areas created.

SELECT UNIT — Select unit by touching with cursor. Selected unit and its path are highlighted.

DISPLAY TAC — Display tactical area for path point of selected unit. Select path point with cursor. The tactical area assigned to the selected path point is highlighted and the path points contained within the tactical area are highlighted.

CLEAR TAC — Clear the tactical areas from the screen for the selected unit.

NEW TAC — Create a new tactical area. New tactical areas can only be created where no tactical area exists. If there are no path points in the new tactical area, it will be deleted. The position of each node of the tactical area is selected by the cursor. To complete the tactical area, press cursor in the menu area. The nodes of the tactical area are joined and highlighted.

COPY TAC — Copy the selected tactical area to produce a new tactical area at a new location. Select a node to copy, select position for node. A tactical area is drawn in the new location and highlighted. Path points within the new tactical area are highlighted. If no unassigned path points lie in the new tactical area, it will be deleted.

COPY UNT TAC	Copy all tactical areas from the selected unit to the current unit.
REMOVE P PT	Remove path points from tactical area. Select each path point to be removed with the cursor. If there are no path points within the tactical area, it will not be deleted since it could be used by another unit.
MOVE	Move tactical area to new location. Select node to reposition. Select new position for node. Tactical area is redrawn at new location and highlighted. Determine which path points are in the tactical area and highlight.
SHOW ALL TAC	Display the tactical areas for all path points of all units.
EDIT TAC	Draw the edit menu at the bottom of the screen for use in editing individual tactical fields. See paragraph 3o for more information.
TAC DEFAULT	Construct a default tactical area for each path point of selected unit. The tactical area encompasses the path point to each side of the selected one and extends a distance of one unit radius beyond. The width of the area is one unit radius to either side.
PRINT DATAMC	Prints data on all tactical areas. Coordinates are printed in military coordinates or UTM coords depending on whether the parameter PRINT UTM is switched on or off. Input the output file number: Enter # (file number) to produce a VIC file TACTAREA#.OUT. Note tactical area data cannot be printed to the CRT.
PRINT TACS	Print data on the tactical areas of the units which are currently in the computer. Coordinates are printed in military coordinates or UTM coords depending on whether the parameter PRINT UTM is switched on or off. Input the output file number: Enter # (file number) to produce a VIC file TACTAREA#.OUT.
READ VIC FILE	Read from a sequential VIC data file and record data in a direct access file TACTAREA#.DAT. Enter VIC file name -.OUT. Are coords in military coords? Answer YES/NO. If reading UTM, enter coords of the VIC origin.

f. Unit ID Generator. The selection of this option will go to the unit menu and ask for you to enter a file number. If a file number has been previously assigned, you will go directly to UNIT ID GENERATOR. This number becomes the # part of the file DA_DATA:UNIT#.DAT.

This menu allows creation of individual units, locations, and TOE numbers for all sides. The unit numbers are created by selection from the individual force structure menus. The selection is highlighted and the appropriate number is displayed in the force structure box. Numbers greater than 9 are referenced alphabetically (10 = A, 11 = B, etc.). Any menu not selected displays a blank in the force structure box. If a zero is required, select the appropriate empty box in the menus.

Entering the unit location is optional. Units with no defined location are displayed in the upper right corner of the screen when the unit file is read in. If the user wants to enter a location while in UNIT ID GENERATOR, all coordinates are expressed in military coordinates.

The unit TOE number is the last group of three boxes to fill in. Menu selections are the same procedure as the unit force structure. A listing of all TOE numbers with defined symbols is provided.

(THE FUNCTIONS CHANGE, DELETE, SAVE, AND LOAD ARE NOT OPERATIONAL AND DEFAULT TO THE UNIT MENU.) Upon exit of menu, you go to the unit menu.

RED FORCE	BLUE FORCE	ORANGE FORCE	GREEN FORCE
001	001	101-102	NONE DEFINED
101-124	101-104	104-115	
126-132	106-107	201-223	
140-143	109	301-304	
201-239	113-114	401-404	
241-245	116	501-502	
251-252	119-121		
301-313	201-214		
316-318	216		
320-323	218-224		
327-328	226-230		
330-331	232-233		
333	236-238		
337-338	241-243		
340	247-249		
401-404	251		
406-408	261		
410	322-324		
501-505	422-424		
601-606	522-523		
611-612			

g. Subordinate menu. This menu assigns the superior/subordinate structure. This menu uses as input the UNIT#.DAT file but the output of this menu creates the file DA_DATA:UNIT#.SUB.

MAIN MENU	Return to main menu. Asks if data has been recorded, because if a different data type is selected all previous data are deleted. Answer YES/NO. If answer is NO, the previous menu is displayed so that the data may be recorded.
INPUT/OUTPUT	Draws the input/output menu, at the bottom of the screen to read, record, and print data. See paragraph 3r for more information
GRAPHICS	Draws the graphics menu at the bottom of the screen for loading and manipulation of picture files. See paragraph 3q for more information.
SELECT UNIT	Select new unit with cursor. Selected unit is highlighted.
SUBORDINATES	Select subordinates for current (highlighted) unit. Current unit and its subordinates are highlighted. Data are displayed on the CRT.
PHASE GROUP	Select units which belong to the same phase group. Select units are assigned the same phase group number. Data are displayed on the CRT. A phase group is a set of specific ground units which will at some time need to coordinate their movement. Units will remain at a designated position until all other units in that phase group have reached their own designated wait positions. Then all units of that phase group will begin movement to the next designated positions.
LEADING ECH	Select the leading echelon for red units. Initially identifies which unit is to be followed by this unit at the start of the campaign. Data are displayed on the CRT. This pointer can be dynamically changed during the run by the decision tables.
COORD GROUP	Select units which belong to the same coordination group. Select units are assigned the same coordination group number. Data are displayed on the CRT. Units given no paths can move automatically whenever another specified unit moves along a designated path and will remain at the same offset distance from that unit. Only one member can have a path. If not, the program will flag the fact that there can only be one leader of the group and the model will abort the run.

h. Communications menu. This menu creates and defines communications networks. This menu uses as input the UNIT#.DAT file but the output of this menu creates the file DA_DATA:UNIT#.NET.

MAIN MENU	Return to main menu. Asks if data have been recorded, because if a different data type is selected, all previous data are deleted. Answer YES/NO. If answer is NO, the previous menu is displayed so the data may be recorded.
INPUT/OUTPUT	Draws the input/output menu, at the bottom of the screen, to read, record, and print data. See paragraph 3r for more information.
GRAPHICS	Draws the graphics menu at the bottom of the screen for loading and manipulation of picture files. See paragraph 3q for more information.
SELECT UNIT	Select new unit with cursor. Selected unit is highlighted.
NEXT NET	If multiple nets have already been defined, this function will display and highlight the next network. If the case of the displayed network is the last network, the first network will be displayed.
NEW NET	Used for the creation of new networks. First unit selected is highlighted. This unit now serves as the central axis for the network. Subsequent selection of units includes those units in that network. All linked units are displayed with a line showing its linkage.
ADD/DEL MEMB	Allows for the addition and/or deletion of units from a specific network by selecting that unit while the network which contains that unit is highlighted.
NET TYPE	The network type can now be entered in alphanumeric characters.
SYSTEM NAME	System name is entered using the alphanumeric submenu.
DEL SYSTEM	Delivery system name is entered using the alphanumeric submenu.
LINKS / NODE	The average number of channels per node is entered using the numeric submenu.
TYPE DATA	The type of data is entered using the numeric submenu.

ANT POLAR	Antenna polarization number is entered using the numeric submenu.
TIME SWITCH	Time switch system number is entered with the numeric submenu.
TRANSM GAIN	Transmitter gain is entered using the numeric submenu.
RECEVER GAIN	Receiver gain is entered using the numeric submenu.
TRANSM HT	Transmitter height in meters.
RECEIVER HT	Receiver height in meters.
TRANSM POWER	Transmitter power is entered using the numeric submenu.
TRANSM FREQ	Transmitter frequency is entered using the numeric submenu.

i. Route plan menu. NOT REQUIRED FOR VIC FILES. This menu allows for travel via individual roads or cross-country. Allows for the calculation of distances and time requirements for individual units. Can go to PATH POINT MENU or back to MAIN MENU. To plan the detailed route between path points. The route for each unit is stored in a separate direct access file DA_DATA:UNITID.ROT

MAIN MENU	Return to the main menu. Asks if data have been recorded, because if a different data type is selected, all previous data are deleted. Answer YES/NO. If the answer is NO, the previous menu is displayed so that the data may be recorded.
PATH PT MENU	Path point menu to create routes for the units.
INPUT/OUTPUT	Draws the input/output menu to read, record, and print data.
GRAPHICS	Draws the graphics menu.
X-COUNTRY	Create a new path from node. Select node. Enter nodes of the detailed path for off-road travel. ROAD TRAVEL may be access for path of the route. Access is also available to NEAREST NODE.
ROAD TRAVEL	Select a path following the roads. Select the node of the path from which road travel is required. If the road types have not been selected, select road types. Select the start and end points of the path with the cursor. If the start or end points are not at a node, select the first and last nodes which are on the road junctions. If there is more than one option for the path at any point, select from nodes displayed. When the path is complete, the nodes of the path are joined.
SELECT ROADS	Select the type of roads for ROAD TRAVEL: AUTOBAHNS MAIN ROADS SECONDARY ROADS FAIR WEATHER ROADS RAILWAYS Selected types are highlighted.
SELECT UNIT	Select unit with the cursor, highlight and draw nodes of its path. The detailed route is drawn between the nodes if it exists.
RETURN TR	Return the traffic regulator to its first path point.
SELECT NODE	Select node of path.

NEAREST NODE	Find the nearest node on the road network. Select position with the cursor. The nearest node is displayed.
UPDATE TIMES	If this is switched on, then when a time is changed for a node, all times for subsequent nodes are updated.
POSITION/TIM	Draw all the units at their locations at a specified time. Enter time (days, hours, minutes).
DELETE ROUTE	Delete whole of the detailed path for selected unit.
COPY PATH	Select unit to copy. The detailed route and the nodes are copied. The unit is moved to the end of the copied path.
EDIT PATH	Edit the main nodes of the path. The detailed route connected to nodes which have been edited is removed. After the path is edited, the detailed route is redrawn.
RT PLAN DATA	Draw the route plan data menu.
NEW UNIT	Create a new unit. Select the position of the center of the unit with the cursor. The unit is drawn in highlight color at the cursor postion.
DEPLOY UNIT	Move unit to new location. If no unit has been selected, select unit. Select new position for the center of the unit. Redraw and highlight unit at new location. If the unit has a path and the new position for the unit is not on that path, then the path point for the unit is moved.
CREATE PATH	Create a path for the selected unit. The position of each node of the path is selected with the cursor. The last node entered may be deleted by selecting it with the cursor. To complete the path, press cursor in the menu area. Nodes of the path are joined and highlighted. Closest end of the path is joined to the unit.

To enter the data for each node of the path.

ARRIVE TIME	Enter the arrival time at the node (days, hours, minutes).
DEPART TIME	Enter the time to leave the node (days, hours, minutes).
END TIME	Enter the time to arrive at next node (days, hours, mins).
POSTURE	Posture for the node, or for traveling from the node. ASSEM-AREA, MARCH, FIRING-POSITION TAC-A-AREA, MOVE-CONTACT, DESTROYED IN COLUMN, ATTACK, AIR-PICK-UP TMP-POSITION, DELAY, AIR-LANDING HASTY-DEF, HELI-BORNE, TAC-MARCH DELIB-DEF
COL LEN NODE	Column length of unit at the node (km).
COL DIA NODE	Column diameter of unit at the node (km).
COL LEN PATH	Column length of unit on path from the node (km).
COL DIA PATH	Column diameter of unit on path from the node (km).
ALTITUDE	Altitude (m).

j. Minefield menu. Menu for the creation and alteration of individual minefields. Allows data input on each. Data is stored in DA_DATA: MINEFIELD#.DAT. This menu can only be reached from and return to the main menu. When sent to the directory OUTPUT: this file becomes part of the VIC module labeled minefields (.MF).

MAIN MENU	Return to main menu. Asks if data have been recorded, because if a different data type is selected, all previous data are deleted. Answer YES/NO. If answer is NO, the previous menu is displayed so that the data may be recorded.
INPUT/OUTPUT	Draws the input/output menu at the bottom of the screen to read, record, and print data. See paragraph 3r for more information.
GRAPHICS	Draws the graphics menu at the bottom of the screen for loading and manipulation of picture files.
SELECT MNFLD	Select new minefield by touching the minefield with the cursor. Selected minefield is highlighted.
NEW MINEFLD	Create a new minefield. The position of the center of the minefield is selected with the cursor. The size of the minefield will be taken to be the last values of frontage and depth. If DENSITY FACT has been set, the number of mines is calculated.
COPY MINEFLD	Copy the selected minefield to produce a new minefield at a new location. If no minefield has been selected, select a minefield to copy. The minefield is highlighted. Select position for the center of the minefield. A minefield is drawn in the new location and highlighted. CAUTION: The copy function does not turn off until another menu selection is made. Subsequent pressing of the cursor in the map area produces more copies. To terminate, select from menu.
MOVE MINEFLD	Move minefield to new location. If no minefield has been selected, select minefield to move. Select new position for the center of the minefield. The minefield is redrawn and highlighted at the new location. The old entity is erased from the screen and local memory.

DELETE MNFLD	Select minefield to be deleted. Deletes data on a selected minefield and removes it from the screen. The minefield is only deleted from local memory. The file in DA_DATA: remains intact until deleted or overwritten. Further minefields may be deleted by selecting with the cursor. CAUTION: This function is still active until it is deselected by making another menu selection.
DENSITY FACT	Input the density factor for minefields. The number of mines = FRONTAGE * DEPTH * DENSITY FACTOR. Or can be thought of as number of mines per square meter. This function can be overridden as required by the number of mines option below.
ENG MISSION	Engineer mission number. Select with the cursor from the submenu drawn at the bottom of the screen. Groups together those minefields in the same engineer mission.
MINEFLD #	Enter new identification number for the selected minefield.
MINETYPE NAM	Minefield type name. Enter up to 12 alphanumeric characters. The name is checked against the minefields currently held in the computer and against the catalog if a direct access file is assigned, to ensure that the name is unique. If there is already a minefield in the computer by the name, it is highlighted.
FRONTAGE	Width of the area occupied by the minefield (meters). Use the cursor to enter this number from the submenu at the bottom of the screen.
DEPTH	Depth of the area occupied by the minefield (meters). Use the cursor to enter this number from the submenu at the bottom of the screen.
ORIENTATION	Orientation, expressed in degrees counterclockwise from east. Use the cursor to enter this number from the submenu at the bottom of the screen.
NO OF MINES	Number of mines in the minefield. Input - , then the number of mines are calculated. This overrides the density factor.
START TIME	Activating time (days, hours, minutes). Zero means already activated. If engineer module is played, time indicates priority.

k. Barrier menu. Menu for the creation and alteration of individual barriers. Allows for data input as to type, visibility, and trafficability. This menu can only be reached from and return to the main menu. Data created in this menu are stored in the file DA_DATA:BARRIER#.DAT, where # is the file number entered by the user. This file, when sent to the OUTPUT: directory (see paragraph 3r), later combines with the line obstacle data file to form part of the VIC file labeled .TB which stands for terrain and barriers.

MAIN MENU	Return to main menu. Asks if data have been recorded, because if a different data type is selected, all previous data are deleted. Answer YES/NO. If answer is NO, the previous menu is displayed so that the data may be recorded.
INPUT/OUTPUT	Draws the input/output menu at the bottom of the screen to read, record, and print data. See paragraph 3r for more information.
GRAPHICS	Draws the graphics menu at the bottom of the screen for loading and manipulation of picture files. See paragraph 3q for more information.
SELECT BAR	Select new barrier by touching node or line segment with the cursor. Selected barrier is highlighted showing all node positions.
NEW BARRIER	Create a new barrier. The position of each node of the barrier is selected with the cursor. To complete the barrier, press cursor in the menu area. The nodes of the barrier are joined and highlighted.
COPY BARRIER	Copy the selected barrier to produce a new barrier at a new location of the same dimensions. If no barrier is selected, you are prompted to select a barrier to copy. The selected barrier is highlighted and shows all node positions. Select a node to copy. This becomes the reference point in placement of the new barrier. Select position for node. A barrier is drawn in the new location and highlighted. CAUTION: The copy function does not turn off until another menu selection is made. Subsequent pressing of the cursor in the map area produces more copies. To terminate, select from menu area.
MOVE BARRIER	Used to move barrier to a new location. If no barrier has been selected, you are prompted to select barrier. Barrier becomes highlighted and shows all node positions. Select node to reposition. This node is the cursor reference point. Select new position for node. The barrier is redrawn and highlighted at the new location while the old entity is erased. The barrier can be moved until another selection is made in the menu area.

EDIT BARRIER — Draw the edit menu at the bottom of the screen for use in modifying the nodes within individual barriers. See paragraph 3n for more information.

DELETE BAR — Select barrier to be deleted. Deletes data on selected barrier and removes it from the screen. The barrier is deleted from the local file only. The file in DA_DATA: remains intact until deleted or overwritten. Further barriers may be deleted by selecting with the cursor. CAUTION: This function is still active until it is deselected by making another menu selection.

BARRIER # — Using the cursor, enter new identification number for the selected barrier from the submenu drawn at the bottom of screen.

VISIBILITY — The following are the only valid data ranges and their meanings for this menu entry--

Visibility:
1 = good
2 = fair
3 = poor

TRAFFICABLTY — The following are the only valid data ranges and their meanings for this menu entry--

Trafficability:
1 = good
2 = fair
3 = poor

BARRIER TYPE — The following are the only valid data ranges and their meanings for this menu entry--

Barrier type:
1 = river
2 = passable feature
3 = impassable feature
4 = urban area
5 = chemically contaminated
6 = nuclear contaminated
7 = biologically contaminated.

1. Line obstacle menu. Menu used for the creation and alteration of individual line obstacles. Allows for data input on each obstacle as to owner, type, delay times, and other essential data items. This menu can only be reached from, and returns to, the main menu. Data created are stored in the file DA_DATA:LINEOBSTCLE#.DAT, where # is the user supplied file number.

MAIN MENU	Return to main menu. Asks if data have been recorded, because if a different data type is selected, all previous data are deleted. Answer YES/NO. If answer is NO, the previous menu is displayed so that the data may be recorded.
INPUT/OUTPUT	Draws the input/output menu at the bottom of the screen to read, record, and print data. See paragraph 3r of reference manual.
GRAPHICS	Draws the graphics menu at the bottom of the screen. This menu is used for loading and manipulating picture files. See paragraph 3q for more information.
SELECT OBSTL	Select new line obstacle by touching node or line segment with the cursor. Selected line obstacle is highlighted showing all node positions.
NEW OBSTACLE	Create a new line obstacle. The position of each node of the line obstacle is selected with cursor. To complete the line obstacle, press cursor in the menu area. The nodes of the line obstacle are joined and highlighted.
COPY OBSTCLE	Copy the selected line obstacle to a new line obstacle at a new location. If no line obstacle has been selected, you are prompted to select a line obstacle to copy. The selected line obstacle is highlighted and shows all node positions. Select a node to copy. This becomes the reference point in placement of the new line obstacle. Select position for node. A line obstacle is drawn in the new location and highlighted. CAUTION: The copy function does not turn off until another menu selection is made. Subsequent pressing of the cursor in the map area produces more copies. To terminate, select from menu area.
MOVE OBSTCLE	Move line obstacle to new location. If no line obstacle has been selected, you are prompted to select line obstacle. The line obstacle becomes highlighted and shows all node positions. Select node to reposition. This node is the cursor reference point. Select new position for node. The line obstacle is redrawn and highlighted at the new location while the old entity is erased. The line obstacle can be moved until another menu selection is made.

EDIT LINE OB	Draw the edit menu at the bottom of the screen for use in modifying the nodes within individual line obstacles. See paragraph 3n for more information.
DELETE OBSTL	Select line obstacle to be deleted. Deletes data on selected line obstacle and removes it from the screen. The line obstacle is deleted from local memory only. The file in DA_DATA: remains intact until deleted or overwritten. Further line obstacles may be deleted by selecting with the cursor. CAUTION: This function is still active until it is deselected by making another menu selection.
FEATURE #	Using the cursor, enter new identification number for the selected line obstacle from the submenu drawn at the bottom of the screen. A number identifying the line feature of this obstacle forms a part. A line feature may be composed of several obstacles, each one having a unique prototype along its length.
PROTOTYPE	Line obstacle prototype name. Using the cursor, enter up to 12 alphanumeric characters.
ENG MISSION	Engineer misssion number. Zero indicates that the obstacle is active. All obstacles having the same engineer mission number will be constructed serially by the same engineer unit which has been given the mission.
OWNER / SIDE	BLUE, RED, or -. (- means not belonging to either side). The side owning the obstacle will suffer a delay equal to the breached time.
BREACH TYPE	Type of feature for breaching purposed. 1 - bridgeable 2 - breachable
DLAY UB BLUE	The delay (in hours) suffered by a blue unit upon encountering this obstacle, given that it has not been breached.
DLAY UB RED	The delay (in hours) suffered by a red unit upon encountering this obstacle, given that it has not been breached.
DLAY B BLUE	The delay (in hours) suffered by a blue unit upon encountering this obstacle, given that it has been breached.
DLAY B RED	The delay (in hours) suffered by a red unit upon encountering this obstacle, given that it has been breached.

SELECT NODES — Select nodes to define the segments which are to be breached.

BREACHED — A dashed line is placed between any two adjacent points to signify that that segment has been breached or bridged. A letter B is placed at that location point in the data file to signify a breached section.

m. Network menu. This is the menu for the creation and alteration of network links. Data are stored in DA_DATA:NETWORK#.DAT.

MAIN MENU — Return to main menu. Asks if data have been recorded, because if a different data type is selected, all previous data are deleted. Answer YES/NO. If answer is NO, the previous menu is displayed so that the data may be recorded.

LOGISTC MENU — Transfers from network menu for logistics data. Data input in logistic menu goes to the same file as the network data.

INPUT/OUTPUT — Draws the input/output menu at the bottom of the screen to read, record, and print data.
See paragraph 3r for more information.

GRAPHICS — Draws the graphics menu at the bottom of the screen for *loading and manipulating picture files.*
See paragraph 3q for more information.

RENUMBER ALL — Renumber the whole road network in order of increasing X--meaning that the nodes are renumbered from west to east regardless of which link its in. All links and alternate nodes are renumbered. Enter the identification number of the first node. Nodes are redrawn with the new numbers.

RENUMBER — Renumber a selected part of the network in order of increasing X. All links and alternate nodes are also renumbered. Select all nodes which are to be renumbered. Enter the identification number of the first node. Nodes are redrawn with the new numbers.

SET SYMBOL — Select new symbol for all subsequent symbols drawn. If a node has been selected, its symbol will be changed. The symbols of all nodes remain unchanged.

NODE COLOUR — Select new drawing color for nodes from menu. If a node has been selected, its color will be changed. The color of all other nodes remain unchanged.

LINK COLOUR — Select new drawing color for links from menu. The color of all links remain unchanged.

ROAD DIST	Calculate the distance along the roads between nodes. Select the two nodes which define the link. If the road types have not been selected, select road types. Select the first and last nodes if the nodes are not on road junctions. If there is more than one option for the path at any point, select from the nodes displayed.
NODE #	Enter new identification number for the selected node.
NEW NODE	Create a new node. The position of each new node of the network is selected with the cursor. When no further nodes are required, press cursor in the menu area.
SELECT NODE	Select new node by touching node with the cursor. Selected node is highlighted.
MOVE NODE	Move node to new location. If no node has been selected, select node. Select new position for node. Recalculate distances to linked nodes. Redraw and highlight node and links at new location. The node can be moved until the cursor is returned to the menu area.
DELETE NODE	Select node to be deleted. Destroy data on selected node and remove from the screen. All links from other nodes to this node are removed. Further nodes may be deleted by selecting with the cursor.
SHOW LINKS	Highlight all the links for the currently selected node. If not selected, select node and highlight.
REMOVE LINK	Remove link between two nodes. If not selected, select node and highlight. Select node to which link is to be removed. Link is deleted from screen.
INSERT LINK	Insert link between two nodes. If not selected, select node and highlight. Select node to link. Link is drawn between the two nodes.
CREATE NET	Start by selecting an existing node or by pressing cursor at position of new node. Select subsequent nodes by pressing cursor at desired location. Each node is linked to the previous one. Nodes are given the next available identification number following that of the first node. Complete the net by pressing the cursor in the menu area. If the symbol menu has been drawn, it may be accessed and the symbol changed during CREATE NET.

n. Logistic menu. Assign logistic data to network. Data is stored in the file NETWORK#.DAT.

NETWORK MENU	Returns to network menu.
INPUT/OUTPUT	Draws input/output menu to read, record, and print data.
GRAPHICS	Draws the graphics menu.
SELECT NODE	Select new node by touching node with the cursor. Selected node is highlighted.
SELECT LINK	Select connecting node for data input. Selected link is highlighted.
TYPE NODE	Describes the initial status of the node: BS = Blue supply area occupied by blue RS = Red supply area occupied by red B = Controlled by blue R = Controlled by red U = Unusable node
SUPPLY SRVCE	Supply service performed: S = Supply only to forward supply units and designated maneuver units SR = Supply to forward supply units and designated maneuver units and receive supplies from the designated supply sources R = Supplies designated maneuver units/receives supplies from designated supply sources. Describes the type of service that is performed from this node if its type designation is "BS" or "RS".
ASSOC UNIT	A name corresponding to a unit defined in the global ground module. This unit will be associated with the forward supply area in order that the supply area can be a target for indirect fire attack.
# ALT NODE	Node numbers of the backup supply points, input in order from rear area to forward area. Select nodes with cursor.
ADD ALT NODE	Add alternate node by entering the number of the alternate node.
ROAD SURFACE	Code for the road surface between nodes: 1 = Concrete 3 = Gravel 2 = Bituminous 4 = Dirt
ROAD WIDTH	Code for the road width between nodes: 1 = roadway >= 24 feet wide 2 = roadway < 24 feet wide

ROAD TERRAIN — Code for the predominate terrain characteristics between nodes:

1 = flat	3 = hills with curves
2 = rolling hills	4 = mountainous

o. Edit menu. This menu allows the editing of line segments and polygons. Upon selecting any of the editing options (i.e., EDIT LINE OB, EDIT BARRIER, etc.), this submenu will be drawn at the bottom of the screen. Using the cursor, select one of the four options. You can continue in edit mode as long as required. Select from the data menu when completed; the submenu will remain displayed until another submenu is drawn. NOTE: Once changes are made, the new entities exist only in the local memory and must be recorded to become part of the file residing in DA_DATA: See reference manual paragraph 3r on input/output.

CHANGE NODE — Change the location of a node within a line segment. If no entity is selected, select entity (line segment or polygon) and it will become highlighted and show all node positions for that entity. Select node to be changed. Select new position for node and the new entity will be drawn, erasing the old entity. Other nodes may be changed until next menu item is selected.

REMOVE NODE — Remove a node from the line segment. If no entity is selected, select entity and it will become highlighted and show all node positions for that entity. Select node to be removed and the new entity will be drawn, erasing the old entity. Other nodes may be removed until next menu item is selected.

INSERT NODE — Insert a node in the middle of a line segment. If no entity is selected, select entity and it will become highlighted and show all node postions for that entity. Select nodes which are before and after the new node. Select the position for the new node and the new entity will be drawn erasing the old entity. Other nodes may be inserted until the next menu item is selected.

ADD NODE — Add a node to either end of the line segment. If no entity is selected, select entity and it will become highlighted and show all node positions for that entity. Select the node at the end of path to add node. Select new node and the new entity will be drawn. Other nodes may be added until next menu item is selected.

p. Parameters. This command, which can only be entered from the MAIN MENU, allows the user to toggle on or off the following items:

DRAW NAMES	Switched on	- draws the names or identification numbers by each entity.
MOVE MENUS	Moves the menus to the other side of the screen.	
PRINT UTM	Switched off	- the data files are printed in military coordinates.
	Switched on	- the data files are printed in UTM coordinates.
AUTO UNIT	Switched on	- the units are automatically drawn when a menu of another type is selected.
AUTO MINEFLD	Switched on	- the minefields are automatically drawn when a menu of another type is selected.
AUTO BARRIER	Switched on	- the barriers are automatically drawn when a menu of another type is selected.
AUTO LINE OB	Switched on	- the line obstacles are automatically drawn when a menu of another type is selected.

The usefulness of this menu can not be overemphasized. Though these parameters are options, this is the only way to display a data file while in a menu of a different type.

The PRINT UTM toggle is a requirement for producing VIC files. If this is not selected, the data contained within the files will be printed to the OUTPUT: directory in military coordinates. This is unsuitable for VIC input.

q. Graphics menu. The command GRAPHICS can be entered from nearly every menu. Upon the selection of this command, a submenu will be drawn at the bottom of the screen. The functions of this menu allow the input of a picture file to the screen. Until a picture has been loaded, you cannot view on the screen some of the data files you may have created due to the fact that you have no point of reference. The additional functions of this menu allow for the manipulation of this picture or the data displayed. The SET COLOUR, CLEAR FOREGD, and CLEAR BACKGD functions do not affect the picture in any way. These functions are for clearing and changing the drawing color in the upper planes, where the data are displayed.

Their functions are as follows:

LOADPIC	Loads and draws a map which has been saved as a picture file. Prompts for the name of the picture file. If the picture file does not exist, a default picture will be loaded. Entering the file name ALLPIC will display all the area in which data on vegetation and roads exist.
ZOOM	Redraws the picture on a different scale. The zoom factor is an integer between 2 and 16. Enter the scale factor and position the cursor at the new map center.
DRAWGRID	Draws the grid to the screen according to the size defined for the grid by using either SETCOORD or MAPSIZE (see reference manual paragraph 3b). If no grid has been defined, the default grid is drawn.
SET COLOUR	Select new drawing color for all new entities from the color bars drawn at the bottom of the screen. If an entity has been selected, its color will be changed when that entity is deselected or no longer highlighted. The color of all other entities created before this time remain unchanged.
CLEAR FOREGD	Clear foreground (top plane) is the plane in which the data menus display data. Data are not destroyed; only the display is cleared.
CLEAR BACKGD	Clear background (middle plane).

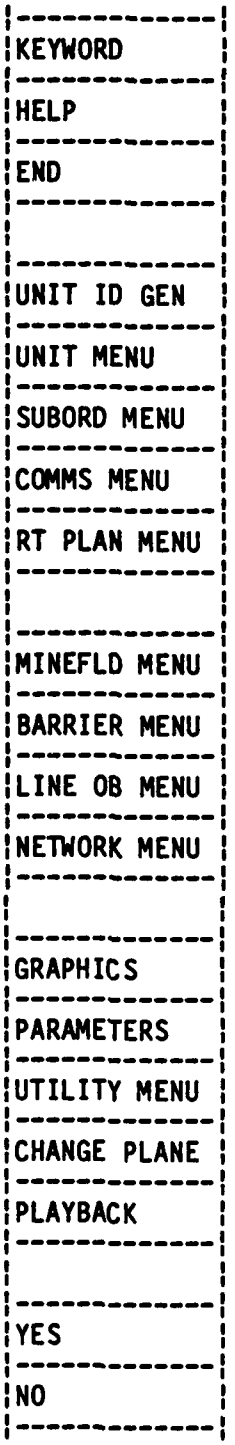
r. Input/output. The menu is drawn at the bottom of the screen when this selection is made. It is used to read, record, and print data.

SET FILE NO	Changes the direct access file number for subsequent read and record. Data are stored in files called DATANAME#.DAT. At # enter the file number for direct access input/output.
READ DATA	Reads data from direct access file. Data are stored in files called DATANAME#.DAT. If the file number has not been set, at #, enter the number of the direct access file. Records may be referenced by the entity identification number or by characters in the entity name. It prompts for the characters to search for (enter * for any character). If no characters are input, then it prompts for the identification number of the first and last entity to be read. All entities read in are drawn on the screen. Existing entities with the same identification numbers are overwritten.
READ VIC FILE	Read from a sequential VIC data file in OUTPUT: DATANAME#.OUT and record data in a direct access file DA_DATA:DATANAME#.DAT. Enter VIC file name -.OUT Are coords in military coords? Answer YES/NO. If reading UTM, enter coords of the VIC origin.
RECORD DATA	Writes data to direct access file. Data are stored in files called DATANAME#.DAT. If the file number has not been set, enter #, the number of the direct access file. Records may be referenced by the entity identification number, or by characters in the entity name. It prompts for the characters to search for (enter * for any character). If no characters are input, it prompts for the identification number of the first and last entity to be recorded. Data on entities which have been recorded are deleted and the entities are removed from the screen.
PRINT DATAMC	Prints data on all entities. Entities are listed in the order in which they are read in. Therefore, if blue units are required before red units, all blue units should be read in first. Coordinates are printed in military coordinates or UTM coords depending on whether the parameter PRINT UTM is switched on or off. Input the output file number: Enter 0 to display data on CRT # (file number) to produce a VIC file DATANAME#.OUT. If printing in UTM, enter the X,Y map coords of the VIC origin to produce X,Y coords for VIC input.
LIST FILES	Lists all direct access files from DA_DATA: on the CRT, which are associated with the selected data type.

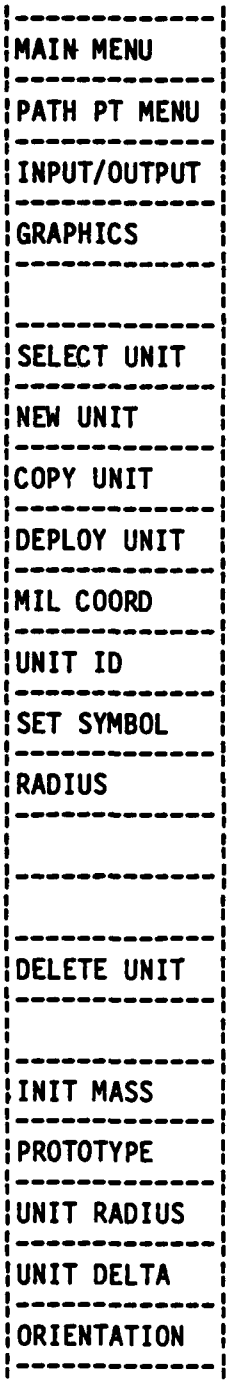
APPENDIX A

MENU REPRESENTATIONS

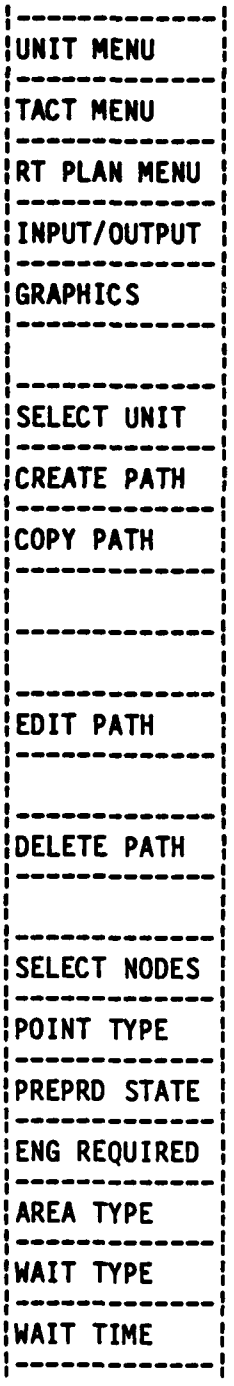
CONTENTS


KEYWORD
HELP
END
UNIT ID GEN
UNIT MENU
SUBORD MENU
COMMS MENU
RT PLAN MENU
MINEFLD MENU
BARRIER MENU
LINE OB MENU
NETWORK MENU
GRAPHICS
PARAMETERS
UTILITY MENU
CHANGE PLANE
PLAYBACK
YES
NO

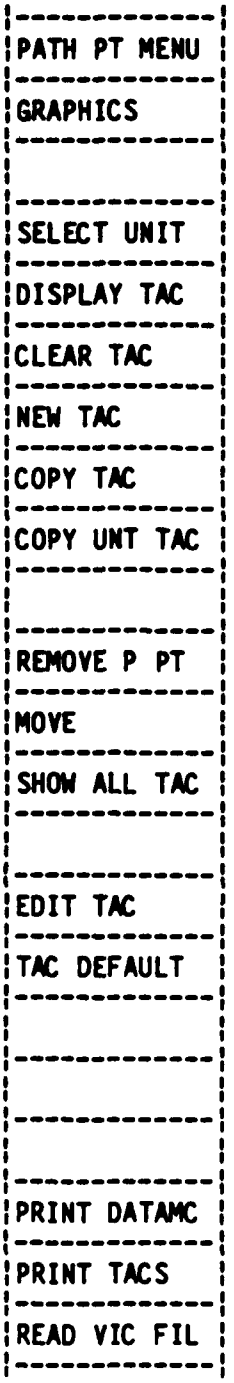
MAIN MENU


MAIN MENU
PATH PT MENU
INPUT/OUTPUT
GRAPHICS
SELECT UNIT
NEW UNIT
COPY UNIT
DEPLOY UNIT
MIL COORD
UNIT ID
SET SYMBOL
RADIUS
DELETE UNIT
INIT MASS
PROTOTYPE
UNIT RADIUS
UNIT DELTA
ORIENTATION

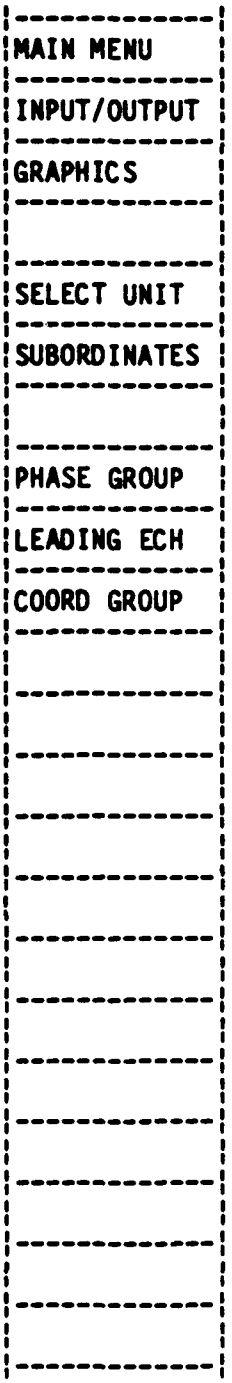
UNIT MENU



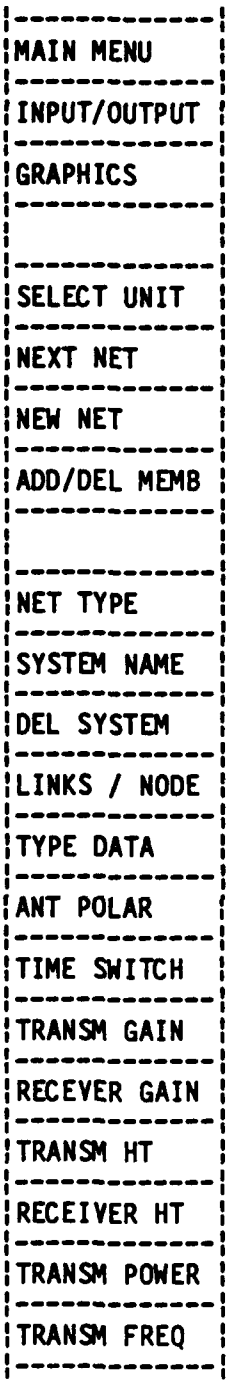
PATH POINT MENU



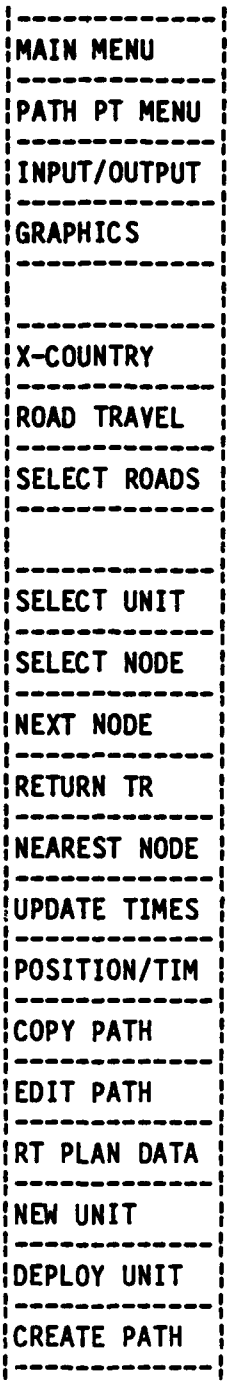
TACTICAL MENU



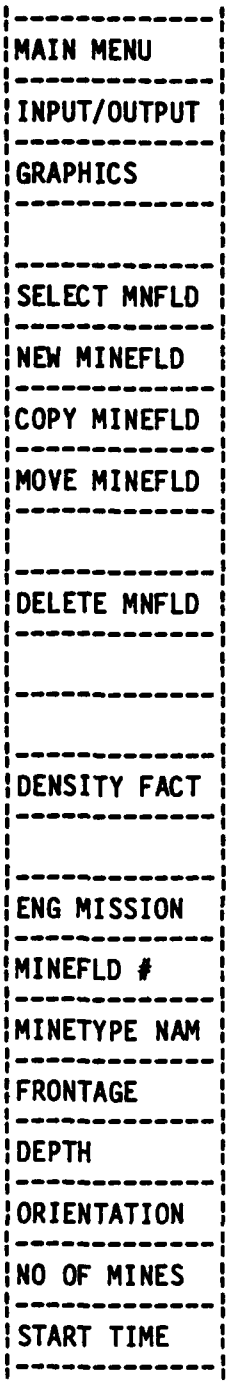
SUBORDINATE MENU



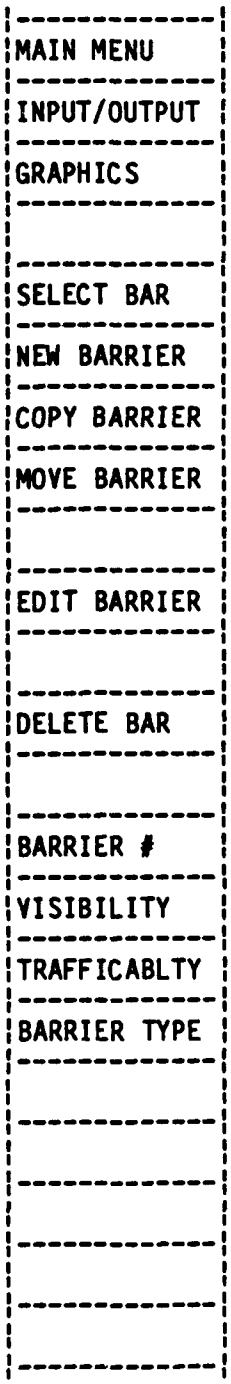
COMMUNICATIONS MENU



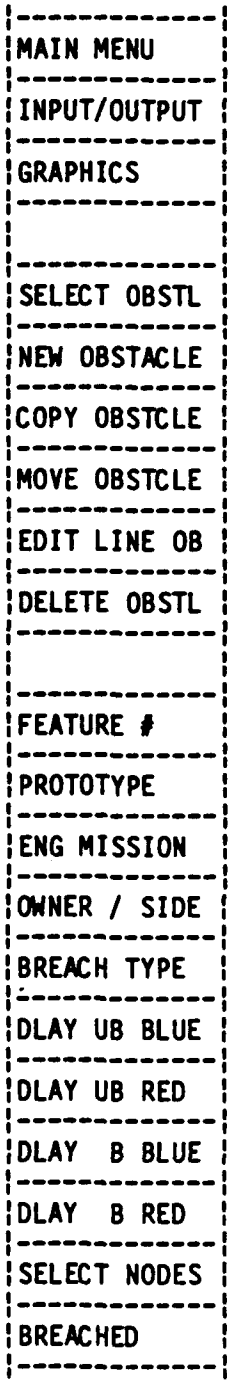
ROUTE PLAN MENU



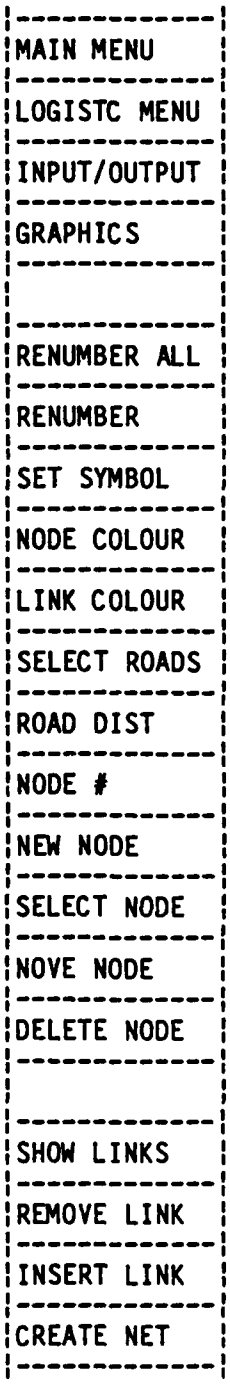
MINEFIELD MENU



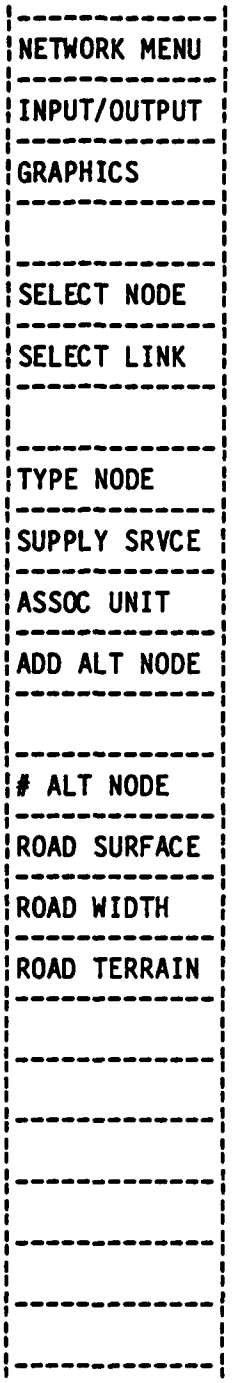
BARRIER MENU



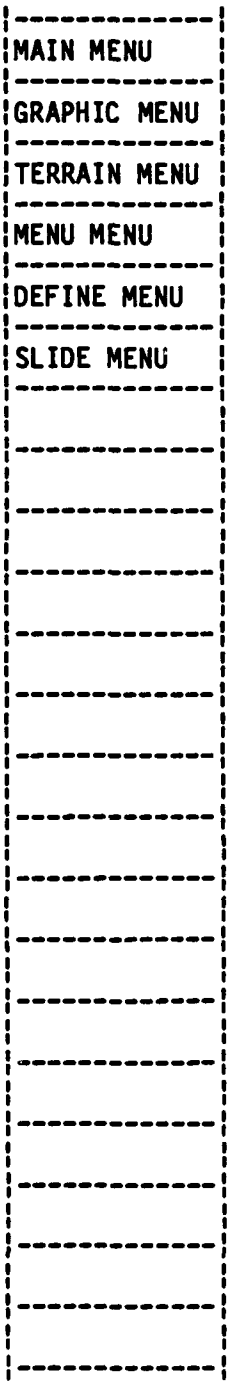
LINE OBSTACLE MENU



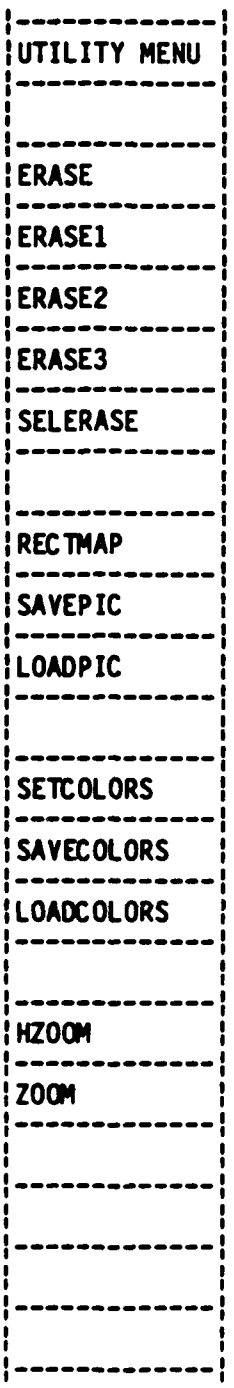
NETWORK MENU



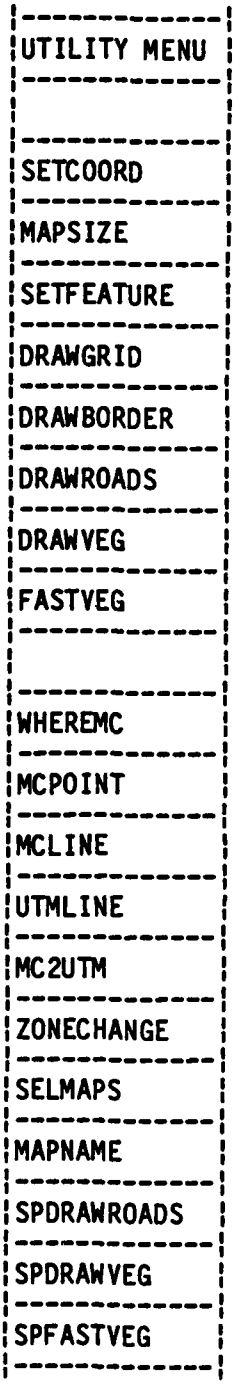
LOGISTICS MENU



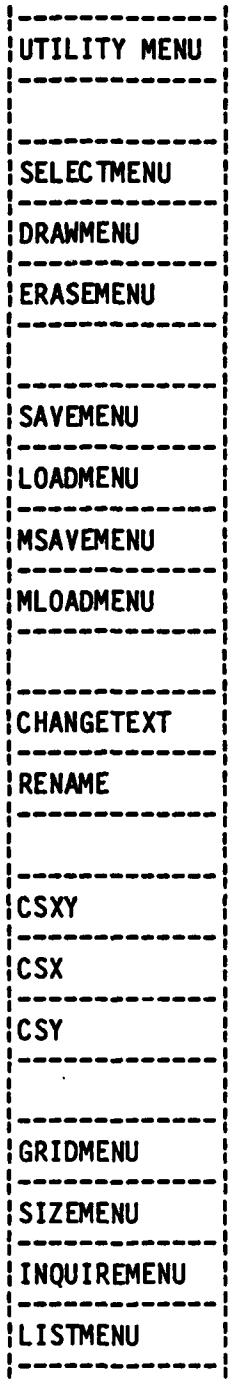
UTILITY MENU



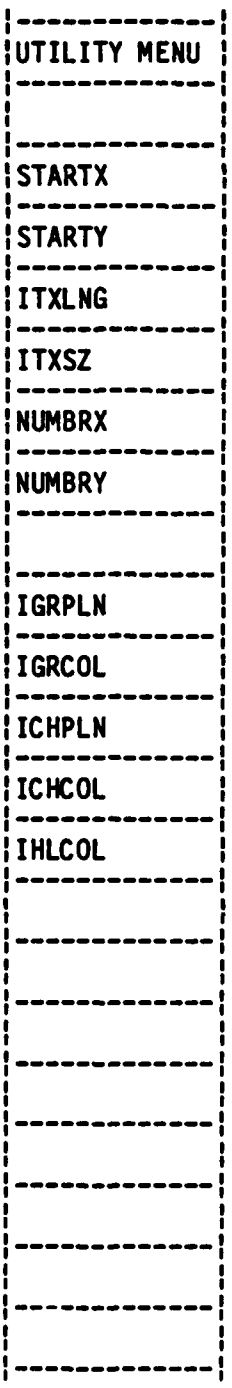
UTILITY MENU/GRAPHIC MENU



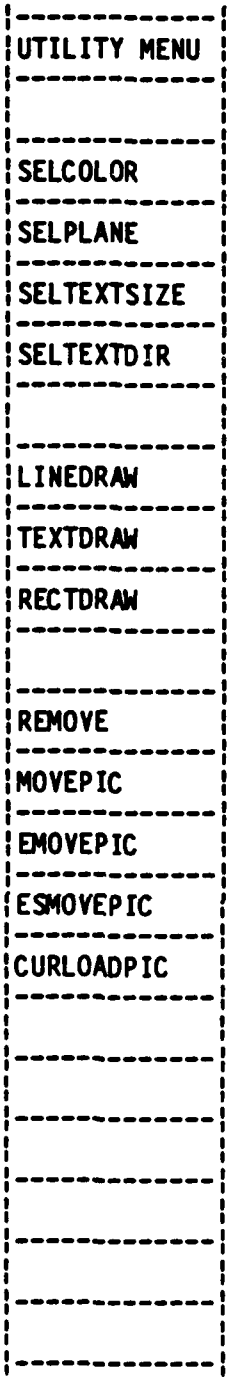
UTILITY MENU/TERRAIN MENU



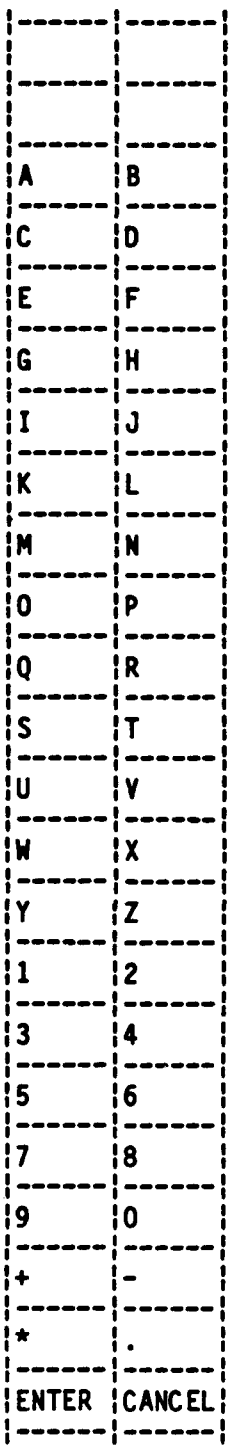
UTILITY MENU/MENU MENU



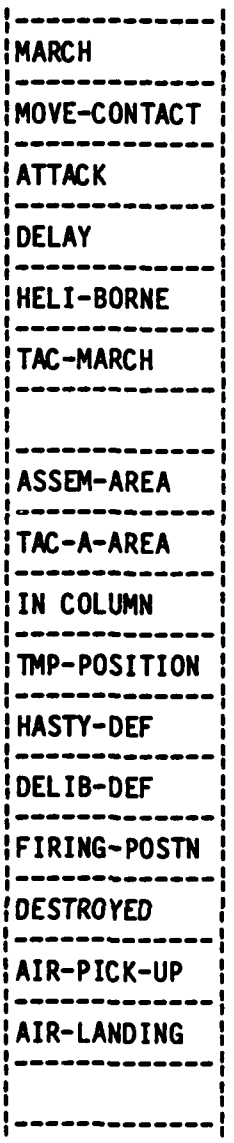
UTILITY MENU/DEFINE MENU



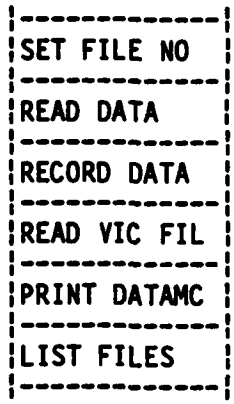
UTILITY MENU/SLIDE MENU



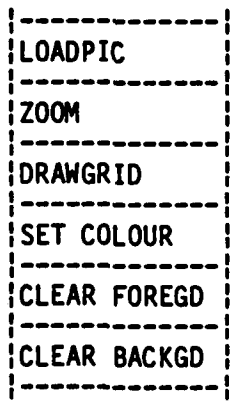
ALPHANUMERIC MENU



POSTURE MENU



INPUT/OUTPUT MENU



GRAPHICS MENU

IMED	DEF
DLAY	RESV
APZ	ALZ
HBAS	HATK
EBAS	

POINT TYPE MENU

CFA	MBA
RESV	1ECH
2ECH	REAR

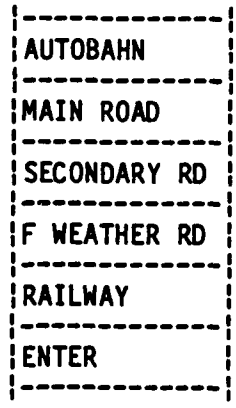
AREA TYPE MENU

SYNC	DLTA
STAT	RGRP
RMOV	RORG

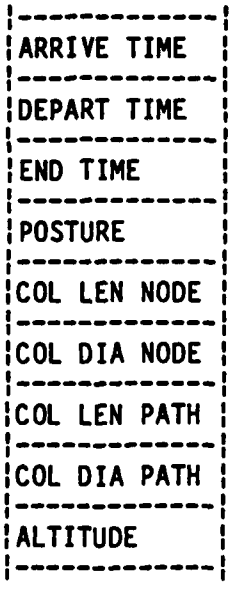
WAIT TYPE MENU

1	2
3	4
5	6
7	8
9	0
.	-
ENTER	CANCEL

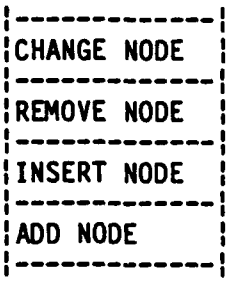
NUMERIC MENU



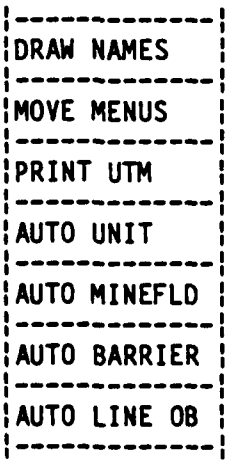
ROAD MENU



ROUTE PLAN DATA MENU



EDIT MENU



PARAMETERS MENU

APPENDIX B

VIP OUTPUT FORMAT

CONTENTS

1. Output format. The following is the header information on each of the files contained in OUTPUT:. All coordinate data must be written in x,y coordinates and not in military coordinates as VIC does not contain a translator for these computations. Also, the NETWORK#.OUT file displays node-to-node distance and the VIC software only works in node-to-node times. The necessary time calculation is performed within VIP and is displayed with the logistic data file.

a. Barrier file. From the file OUTPUT:BARRIER#.OUT

```
''                    AREA OBSTACLE DATA

   0   '' NUMBER OF BARRIERS


''BARRIER VISIBILITY  TRAFFICABILITY  BARRIER   NO OF              COORDS
'' NO                                 TYPE    POINTS
```

b. Line obstacle file. From the file OUTPUT:LINEOBSTCLE#.OUT

```
''                    LINE OBSTACLE DATA


   0   '' NUMBER OF OBSTACLE PROTOTYPES
   0   '' NUMBER OF LINE OBSTACLES
   0   '' NUMBER OF LINE SEGMENTS


''   PROTOTYPE   BREACH      UNBREACHED      BREACHED
''     NAME       TYPE      BLUE  RED      BLUE  RED



''   FEATURE   OBSTACLE     ENGINEER   OWNER NUMBER
''   NUMBER    PROTOTYPE    MISSION     SIDE POINTS
```

c. Minefield file. From the file OUTPUT:MINEFIELD#.OUT

```
''                    MINEFIELD DATA

   0   '' NUMBER OF MINEFIELD TYPES

   0   '' NUMBER OF MINEFIELDS

''ENG NR   MINE TYPE   FRONT   DEPTH   ORIENT       LOCATION
''                                                  X       Y

                                          NO OF     START TIME
                                          MINES      DD HH MM
```

d. Network file. From the file OUTPUT:NETWORK#.OUT

```
''                    NETWORK DATA

   0   '' NUMBER NODES IN NETWORK

''NODE #     X       Y     CONNECTS   DIST

''                    LOGISTIC NETWORK DATA
```

e. Logistics file. From the file OUTPUT:NETWORK#.OUT

```
   0   '' NUMBER NODES IN NETWORK

''                    TYPE  SUPPLY     ASSOC   #NODE   PT     ALT      CONNECT
''NODE #   X     Y     NODE  SERVICE     UNIT   QTY    LIST              TO

                                                        ROADWAY
                                                       DESCRIPTION
```

f. Tactical area file. From the file OUTPUT:TACTAREA#.OUT

```
''                    TACTICAL AREA DATA

   0    '' MAXIMUM TACTICAL AREA NUMBER

''NR    # VERTICES      X-COORD      Y-COORD
```

g. Unit file. From the file OUTPUT:UNIT#.OUT

```
''                    UNIT LOCATION AND PATH POINT DATA

    0    '' NUMBER OF PROTOTYPES
    0    '' NUMBER OF UNITS

''                 ENTRY      INIT     PROTO      UNIT     # PATH          POINT
''NR NAME         DD:HH:MM    MASS     TYPE      ORIEN     POINTS          TYPE

                   PREP    AREA         LOCATION      WAIT    WAIT  TIME      TAC
                   POS     TYPE        X        Y     TYPE    DD :HH :MM     AREA
```

h. Unit subordinate file. From the file OUTPUT:UNIT#.OUT

```
''                    SUBORDINATE STRUCTURE DATA

   0    '' NUMBER OF PHASE AND COORDINATION GROUPS

''  UNIT NAME                        #SUB   PHASE GP   LEADING ECH   COORD GROUP
```

i. Communications file. From the file OUTPUT:UNIT#.OUT

```
0    '' NUMBER OF COMMUNICATIONS NETS

''                              NUMBER                    AVERAGE #
''                 NET          SYSTEMS    SYSTEMS        CHANNELS   TYPE   POLAR
'' NET   OWNER      TYPE         ON NET     ON  NET        NODE/NET   NET    IZATION

                  TIME                                ANTENNA
                  SWITCH          GAIN                HEIGHT              TRANSMITTER
                  SYSTEM   TRAN      REC          TRAN      REC          POWER     FREQ

''                      COMMUNICATIONS NETS
```

2. VIP output processing. Due to the fact that VIP uses the same array space when working on each of the data menus, the procedure to turn VIP data files into VIC readable files is discussed separately at this time.

a. General. The unit data files created by VIP are turned into VIC readable files by the following procedures:

(1) Entering the INPUT/OUTPUT command from either the unit menu or the path point menu.

(2) Select "PRINT DATAMC". You are prompted for a file number. The file UNIT#.OUT is in OUTPUT: awaiting processing into VIC.
The same procedure is used for the following menu data files:

(a) Subordinate menu. Creates the file OUTPUT:UNIT#.SUB
(b) Minefield menu. Creates the file OUTPUT:MINEFIELD#.OUT
(c) Barrier menu. Creates the file OUTPUT:BARRIER#.OUT
(d) Line Obstacle menu. Creates the file OUTPUT:LINEOBSTCLE#.OUT

b. Tactical. This menu has no INPUT/OUTPUT selection. The file is created, opened, and closed when you enter and exit the tactical menu. To create an .OUT file, select the "PRINT DATAMC" area and enter a file number.

c. Route planning. If a route planning .OUT file is required, the following safeguards must be implemented to avoid data loss. Input/Output is still the same but it also creates a file OUTPUT:UNIT#.OUT. To avoid overwritting of the unit file, you must choose a different file number. This same provision also applies to the DA_DATA: directory when dealing with the route planning menu.

d. Network/logistics. Though the logistics menu uses the network menu data file, the output generated by these two menus are completely different. Extreme care must be taken in assigning DIFFERENT file numbers to each. Failure to do so will result in the overwriting of the previous data file.

e. Additional information. VIC cannot accept input in military coordinates though VIP can produce them. Watch the use of parameter toggle "PRINT UTM" in the main menu. Reading a VIC file back to the DA_DATA: directory could create a problem if the file already exists. The file from OUTPUT: does not simply overwrite the file in DA_DATA:, it "ands" the two files together with only duplicate entries being overwritten. Files (.OUT) must be run through a separate preprocessor to reduce them down to data--essentially stripping the header information off the files.

APPENDIX C

PROGRAM STRUCTURE REFERENCE

CONTENTS

1. General. VIP is an interactive system to facilitate the building of input files. The preprocessor is menu driven. There is a menu containing a list of keywords for each data type. Additional keywords may be input from the CRT. Files may be built for the following data:

a. Unit locations and path points
b. Unit subordinate structure
c. Tactical areas
d. Minefields
e. Barriers (area obstacles)
f. Line obstacles
g. Logistics networks

The following documentation is set up for a system 11/780 with a file hierarchy that was set up by the programmer team doing the work at this time. The assigned logicals and call files are not set in stone but it is recommended that unless outside considerations override, these remain the way they are because they are time tested and proven to be accurate.

2. Logical assignments. Before the VIP package can be executed, a series of files have to be set up, assigned, or modified so the host system can initialize correctly. These statements are in a command file labeled OASG.COM. This file can be executed alone or in conjunction with the OLINK.COM or the ORUN.COM dicussed in the next section.

The OASG.COM file appears as follows:

```
$ ASSIGN DATA$DUA2:[VIP.KELLNER] OKGL          ! KELLNER GRAPHICS SOFTWARE
$ ASSIGN DBA0:[GRAPHICS.RAMTEK.CGIP] ORGL      ! RAMTEK GRAPHICS SOFTWARE

$ ASSIGN DATA$DUA2:[VIP.DA_DATA] DA_DATA       ! READ/WRITE VIP RA FILES
$ ASSIGN DATA$DUA2:[VIP.OUTPUT] OUTPUT         ! THE .OUT FILES FROM VIP
$ ASSIGN DATA$DUA2:[VIP.ROUTE] ROUTEFILE       ! THE .ROT FILES FROM VIP
$ ASSIGN DATA$DUA2:[VIP.SYMBOLS] SYMBOLS       ! THE SYMBOL FILE
$ ASSIGN DATA$DUA2:[VIP.ROADS] ROADS           ! LINDA'S ROUTE PLANNING
                                               ! INPUT FILES
$ ASSIGN DATA$DUA2:[VIP.MAPS] MAPFILE          ! MAP FILES .VEG,.NVG,.MAP
$ ASSIGN DATA$DUA2:[VIP.PIC] PICFILE           ! PICTURE FILES
$ ASSIGN DATA$DUA2:[VIP.COLOR] COLFILE         ! COLOR FILES .KOL (13BIT)
$ ASSIGN DATA$DUA2:[VIP.MEN] MENFILE           ! THE MENU FILES .MMN,.MEN
$ ASSIGN DATA$DUA2:[VIP.DOC] VIPDOC            ! LINDA'S HELP FILES .DOC
$ ASSIGN DATA$DUA2:[VIP.COMMON] VIPCMN         ! THE COMMONS .CMN,.PAR,.FMT
                                               ! .CDA FILES
```

3. Program linking. The OLINK.COM file takes all the related object code files and creates the executable code file necessary for VIP to run. This allows the user to modify portions of the program and implement them without destroying the integrity of the software for another user. As stated above, the OASG.COM file can be part of the OLINK.COM file as follows.

Listing of the OLINK.COM:

```
$ @[VIP.CODE]OASG                                    ! PICK UP VIP LOGICALS
$ SET DEF DATA$DUA2:[VIP.CHENAULT]                   ! GO TO YOUR LOCAL DIRECTORY
$ !!!!
$ LIB/EXTR=*/OUTP=FLVN.OBJ [VIP.FLVN]A               ! FLVN VIP CHANGES
$ LIB/EXTR=*/OUTP=MIKES.OBJ A                        ! INDIVIDUALS VIP CHANGES
$ !!!!
$ LINK [VIP.CHENAULT]ADRIVE_VIP,-                    ! LINK MAIN DRIVER
FLVN.OBJ,MIKES.OBJ,-                                 ! WITH ANY CHANGED ROUTINES
$ !!!!
[VIP.CODE]A/LIB,-                                    ! AND ALL UNCHANGED CODE
$ !!!!
OKGL:CGF/OPT                                         ! TO PROPER GRAPHIC PACKAGE
$ EXIT
```

As stated before, any modifications in execution (in this case, any FLVN modifications existing in [VIP.FLVN] are picked up and linked before getting the rest of the code (FLVN/WSMR approved) from the object library in [VIP.CODE]. This link creates the VIP executable file ADRIVE_VIP.EXE. This can now be run directly or as part of a ORUN.COM file. If it is run directly, the proper assign statements must be done first. These statements are part of the ORUN.COM file but do change from system to system. See VIP support for further information.

The format of the "ORUN.COM" is as follows:

```
$ SET MESSAGE/NOFAC/NOIDENT/NOTEXT/NOSEV      ! SO SUPERCEDE MSGS DONT APPEAR
$ @[VIP.CODE]OASG                             ! PICK UP VIP LOGICALS
$ SET MESSAGE/FAC/IDENT/TEXT/SEV
$ RUN [VIP.CHENAULT]ADRIVE_VIP                          ! EXECUTE LO RES VIP
$ EXIT
```

As with the OLINK file, the OASG.COM is included in the ORUN.COM file. This eliminates the necessity of doing a OASG or a OLINK each terminal session, provided you use the same executable file.

4. VIP modules. The VIP software package is broken down into several different modules. These modules being:

a. ADRIVE_VIP Main driver. Driven by variable KEY (12-character text variable) which is input from the menu or the CRT depending on whether the variable SELECT = MENU or KEYWORD.

b. ADRIVE_KEYWORDS_ Determine the action resulting from the selection of KEY. Each menu has a subroutine associated with it which lists its keywords. Keywords input from the CRT are dealt with in ADRIVE_KEYWORDS_CRT and in MDRIVE.

c. ENTITY_ General routines which deal with operations on all types of entities. An entity may be:

(1) Tactical area
(2) Unit initial location + path points
(3) Minefield
(4) Barrier
(5) Line obstacle

d. IO_ Input/output routines for direct access files, sequential files, and for printing information to the CRT or the RAMTEK.

e. NET_ Network routines for logistics.

f. ROAD_NET_ Accesses the link node data base for road networks.

g. ROAD_PATH_ Use the link node data base to construct paths along the roads.

h. SUBMENU_ Draw and select from the submenus.

i. TAC_ Tactical area routines.

j. UNIT_ROUTE_ Constructs detailed paths between VIC path points.

k. UNIT_SUBORD_ Constructs the unit subordinate structure.

l. UTLY_ Utility routines.

END

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